REMARKS

Claim Rejections 35 U.S.C. § 102 (e)

The Examiner has rejected claims 1 - 4, 6 - 8,10 - 19 under 35 U.S.C. §102 (e) as being anticipated by Efland et al. (US 6,025,275). Applicant respectfully disagrees with the Examiner. Applicant has canceled claims 1 – 20 without prejudice. Applicant has added new claims 31 – 54.

Applicant forms a low dielectric constant material 310 over the bond pad 304 and the first member 306 and completely fills in the gap 308 between the bond pad 304 and the first member 306. See Figure 3b and lines 13 – 16 on page 9 of the specification. This element of Applicant's claimed invention results in low interconnect capacitance and faster device performance. See lines 7 –10 on page 8 of the specification.

In contrast, the cited reference of Efland et al. only mentions that "the dielectric layer 22 may be a passivation overcoat isolating the initial semiconductor structure 10 generally from subsequent integrated circuit processing". See Figure 1A and Col. 3, lines 40 – 42. Efland et al. does not teach that the dielectric layer 22 must be formed from a low dielectric constant material. Efland et al. also fails to teach that the gap between metal 20 must be filled in completely.

Applicant forms a thin layer of a moisture resistant material 312 over the low dielectric layer material 310 so as to provide a suitable hermetic seal. See Figure 3c and lines 14 – 15 on page 10 of the specification. This element of Applicant's claimed invention prevents moisture penetration under humid ambients at normal chip operating temperatures of 100 – 120 degrees Centigrade. See lines 12 – 14 on page 10 of the specification. Keeping the layer 312 thin avoids increasing the capacitive

coupling between adjacent metal features. See lines 23 - 25 on page 10 and lines 1 -2 on page 11 of the specification.

In contrast, the cited reference of Efland et al. teaches that the dielectric layer 22 serves as electrical isolation between the overlying copper seed layer 32 and the underlying semiconductor layer 12. See Col. 4, lines 58 - 60. No mention is made of moisture resistance. No mention is made of keeping the layer thin.

Applicant forms a conducting barrier layer 318 that also forms a hermetic seal along sidewalls 317 of contact opening 316. See Figure 3f and lines 7 - 13 on page 12 of the specification.

In contrast, the cited reference of Efland et al. only teaches that the barrier layer 30 serves as electrical contact between the overlying copper seed layer 32 and the underlying metal layer 20. See Figure 1B and Col. 4, lines 60 - 63. No mention is made of forming a hermetic seal along the sidewalls of the contact opening.

In summary, Efland et al. does not anticipate Applicant's claimed invention since Efland et al. does not teach each and every element of Applicant's claimed invention. In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to the new claims 31 - 54 under 35 U.S.C. §102 (e).

Claim Rejections 35 U.S.C. § 103 (a)

The Examiner has rejected claims 5, 9, 20 under 35 U.S.C. §103 (a) as being unpatentable over Efland et al. (US 6,025,275) in view of Byrne (US 5,136,364). Applicant has canceled claims 1 - 20 without prejudice. Applicant has added new claims 31 - 54.

Applicant's claimed invention includes several elements which are not taught by the cited reference of Efland et al. Please see Applicant's arguments presented in the previous section on the claim rejections for 35 U.S.C. §102 (e). Applicant further

forms a barrier layer 318 from a dual layer film comprising an upper nickel vanadium film and a lower titanium film. See Figure 3f and lines 16 - 18 on page 12 of the specification.

In contrast, Byrne forms a barrier layer 15 of nickel-vanadium alloy on top of an adhesion layer 14 of aluminum. See Figure 2 and Col. 2, lines 38 - 41. Thus, the barrier layer of Byrne differs from the barrier layer of Applicant. Unlike Applicant, Byrne also teaches that the adhesion layer 14 is optional. See Col. 2, line 38. As a result, combination of the method of Efland et al. and the method of Byrne will not produce the method claimed in Applicant's invention. Consequently, Applicant submits that the two references cited by the Examiner do not, individually or collectively, teach, suggest, or render obvious the invention as claimed by the Applicant.

In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to the new claims 31 - 54 under 35 U.S.C. §103 (a).

Applicant believes that all claims pending are now in condition for allowance so such action is earnestly solicited at the earliest possible date.

If there are any additional charges, please charge Deposit Account No. 02-2666. If a telephone interview would in any way expedite the prosecution of this application, the Examiner is invited to contact the undersigned at (408) 720-8300.

Respectfully submitted,
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